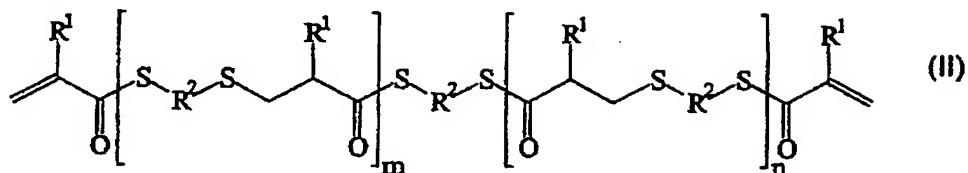


CLAIMS

1. A mixture for the production of transparent plastics, comprising

a) a prepolymer, produced from compounds of the formula (I) and (II)



wherein R¹ each independently of one another mean hydrogen or a methyl residue,

R² each independently of one another mean a linear or branched, aliphatic or cycloaliphatic residue or a substituted or unsubstituted aromatic or heteroaromatic residue and m and n each independently of one another mean a whole number greater than 0 with m + n > 0, and alkylthiols or polythiols, preferably compounds of the formula (III),

HS-R³-SH (III)

wherein R³ can similarly or differently from R² have the meaning stated in R², and

b) at least one radical polymerizable monomer (A) with

at least two methyl acrylate groups and

c) aromatic vinyl compounds,

d) optionally a radical polymerizable monomer with at least two terminal olefinic groups, which differ in reactivity, and/or

e) optionally at least one ethylenically unsaturated monomer (B).

2. The mixture as claimed in claim 1, characterized in that it contains more than 10 mol.% of compounds of the formula (II) with m + n = 2, based on the total quantity of the compounds of the formula (I),

(II) and (III).

3. The mixture as claimed in one of the foregoing claims, characterized in that the residue R^2 5 of the formulae (I) and/or (II) is an aliphatic residue with 1 to 10 carbon atoms.

4. The mixture as claimed in one of the foregoing claims, characterized in that the mixture 10 contains more than 5.8 mol.% of compounds of the formula (II) with $m + n = 3$, based on the total quantity of the compounds of the formula (I), (II) and (III).

15 5. The mixture as claimed in one of the foregoing claims, characterized in that the mixture contains 1 to 50 mol.% of compounds of the formula (I), based on the total quantity of the compounds of the formula (I), (II) and (III).

20 6. The mixture as claimed in one of the foregoing claims, characterized in that the mixture contains 1 to 40 mol.% of compounds of the formula (II) with $m + n = 1$, based on the total quantity of the 25 compounds of the formula (I), (II) and (III).

7. The mixture as claimed in one of the foregoing claims, characterized in that the mixture contains compounds of the formula (II) with $m + n > 3$.

30 8. The mixture as claimed in one of the foregoing claims, characterized in that the total content of compounds of the formula (I), (II) and (III) is at least 5.0 wt.%, based on the total weight of the 35 mixture.

9. The mixture as claimed in one of the foregoing claims, characterized in that the mixture

contains at least one monomer (A) which is copolymerizable with the prepolymers prepared from the monomers of the formulae (I), (II) and (III).

5 10. The mixture as claimed in claim 9, characterized in that the mixture contains di(meth)acrylates.

10 11. The mixture as claimed in the foregoing claims, characterized in that the mixture preferably contains styrene as aromatic vinyl compounds.

15 12. The mixtures as claimed in claim 1, characterized in that they contain a radical polymerizable monomer with at least two terminal olefinic groups which differ in reactivity, of the general formula



wherein

20 the residue R¹⁹ independently means a hydrogen atom, a fluorine atom and/or a methyl group,
the residue R¹⁸ means a linking group which preferably contains 1 to 1000, in particular 2 to 100 carbon atoms, and the residue Y means a linkage or a linking group with 0 to 1000 carbon atoms, in particular 1 to 1000 carbon atoms and preferably 1 to 100 carbon atoms.

30 13. The mixtures as claimed in claim 12, characterized in that they contain allylpolyethylene glycol methacrylate.

35 14. The mixtures as claimed in claim 1, characterized in that they contain at least one ethylenically unsaturated monomer (B), preferably methacrylate.

15. The mixtures as claimed in claim 14, characterized in that they contain 2-hydroxyethyl methacrylate.

5 16. A process for the production of transparent plastics, characterized in that a mixture as claimed in one of the foregoing claims is polymerized.

10 17. A transparent plastic obtainable by a process as claimed in claim 16.

18. The plastic as claimed in claim 17, characterized in that the refractive index of the plastic according to DIN 53491 is greater than 1.59.

15 19. The plastic as claimed in claims 17 or 18, characterized in that the Abbé number of the plastic according to DIN 53491 is greater than 36.

20 20. The plastic as claimed in one of claims 17 to 19, characterized in that the mean value of the diameter of the ball which does not damage the test specimen in the falling ball test is ≥ 18 .

25 21. The plastic as claimed in one of claims 17 to 20, characterized in that the transmission of the plastic according to DIN 5036 is $\geq 89\%$.

30 22. The plastic as claimed in one of claims 17 to 21, characterized in that its glass transition temperature is greater than 80.0°C.

35 23. A mixture containing
(a) a mixture as claimed in claim 1 and
(b) at least one photochromic dye.

24. A photochromic material containing a mixture as claimed in claim 23.

25. A use of the photochromic material as claimed in claim 24 as a lens or glass panes or glass inserts.

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26. The use of the highly transparent plastic as claimed in one of claims 17 to 22 as an optical lens.

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27. An optical, in particular ophthalmic lens containing a transparent plastic as claimed in at least one of claims 17 to 22.